

But from the point of view of our national progress we are bound to be active workers in this field of science. There is no doubt we do not hold the position we did as chemical manufacturers, and unless our chemical industries keep pace with chemical discovery fully as well as they do on the Continent, our position must further decline, and moreover, unless we make chemical discoveries ourselves, we must wait until we hear of the discoveries of others, which will mean, in cases where they are susceptible of practical application, that we are placed at a great disadvantage.

The bearing which the progress of chemistry in this country has upon this the oldest Chemical Society in existence is so obvious that it is superfluous to make any observation on the subject, except to express the hope that it will continue to be active, and found doing its part for the advancement of our science, and as a consequence be an important factor in the welfare of our country.

#### ON THE EVOLUTION OF FORMS OF ORNAMENT<sup>1</sup>

THE statement that modern culture can be understood only through a study of all its stages of development is equally true of its several branches.

Let us assume that decorative art is one of these. It contains in itself, like language and writing, elements of ancient and even of prehistoric forms, but it must, like these other expressions of culture, which are for ever undergoing changes, adapt itself to the new demands which are made upon it, not excepting the very arbitrary ones of fashion; and it is owing to this cause that, sometimes even in the early stages of its development, little or nothing of its original form is recognisable.

Investigations the object of which is to clear up this process of development as far as possible are likely to be of some service: a person is more likely to recognise the beauties in the details of ornamental works of art if he has an acquaintance with the leading styles, and the artist who is freed from the bondage of absolute tradition will be put into a better position to discriminate between accidental and arbitrary and organic and legitimate forms, and will thus have his work in the creation of new ones made more easy for him.

Hence I venture to claim some measure of indulgence in communicating the results of the following somewhat theoretical investigations, as they are not altogether without a practical importance. I must ask the reader to follow me into a modern drawing-room, not into one that will dazzle us with its cold elegance, but into one whose comfort invites us to remain in it.

The simple stucco ceiling presents a central rosette, which passes over by light conventional floral forms into the general pattern of the ceiling. The frieze also, which is made of the same material, presents a similar but somewhat more compact floral pattern as its chief motive. Neither of these, though they belong to an old and never extinct species, has as yet attained the dignity of a special name.

The walls are covered with a paper the ornamentation of which is based upon the designs of the splendid textile fabrics of the Middle Ages, and represents a floral pattern of spirals and climbing plants, and bears evident traces of the influence of Eastern culture. It is called a pomegranate or pine-apple pattern, although in this case neither pomegranates nor pine-apples are recognisable.

Similarly with respect to the pattern of the coverings of the chairs and sofas and of the stove-tiles; these, however, show the influence of Eastern culture more distinctly.

The carpet also, which is not a true Oriental one, fails to rivet the attention, but gives a quiet satisfaction to the eye which, as it were, casually glances over it, by its simple pattern, which is derived from Persian-Indian

archetypes (Cashmere pattern, Indian palmettas), and which is ever rhythmically repeating itself (see Fig. 1).

The floral pattern on the dressing-gown of the master of the house, as well as on the light woollen shawl that is thrown round the shoulders of his wife, and even the brightly coloured glass knickknacks on the mantel-piece, manufactured in Silesia after the Indian patterns of the Reuleaux collection, again show the same motive; in the one case, in the more geometrical linear arrangement, in the other, in the more freely entwined spirals.

Now you will perhaps permit me to denominate these three groups of patterns that occur in our new home fabrics as modern patterns. Whether we shall in the next season be able, in the widest sense of the word, to call these patterns modern naturally depends on the ruling fashion of the day, which of course cannot be calculated upon (Fig. 2).

I beg to be allowed to postpone the nearer definition of the forms that occur in the three groups, which, however,



FIG. 1.

on a closer examination all present a good deal that they have in common. Taking them in a general way, they all show a leaf-form inclosing an inflorescence in the form of an ear, or thistle; or at other times a fruit or a fruit-form. In the same way with the stucco ornaments and the wall-paper pattern.

The Cashmere pattern also essentially consists of a leaf with its apex laterally expanded: it incloses an ear-shaped flower-stem, set with small florets, which in exceptional cases protrude beyond the outline of the leaf; the whole is treated rigorously as an absolute flat ornament, and hence its recognition is rendered somewhat more difficult. The blank expansion of the leaf is not quite unrelieved by ornament, but is set off with small points, spots, and blossoms. This will be thought less strange if we reflect on the Eastern representations of animals, in the portrayal of which the flat expanses produced by the muscle-layers are often treated from a purely decorative point of view, which strikes us as an exaggeration of convention.

<sup>1</sup> From a paper by Prof. Jacobsthal in the *Transactions* of the Archaeological Society of Berlin.

One cannot go wrong in taking for granted that plant-forms were the archetypes of all these patterns. Now we know that it holds good, as a general principle in the history of civilisation, that the tiller of the ground supplants the shepherd, as the shepherd supplants the hunter: and the like holds also in the history of the branch of art we are discussing,—representations of animals are the first to make their appearance, and they are at this period remarkable for a wonderful sharpness of characterisation. At a later stage man first begins to exhibit a preference for plant-forms as subjects for representation, and above all for such as can in any way be useful or hurtful to him. We, however, meet such plant-forms used in

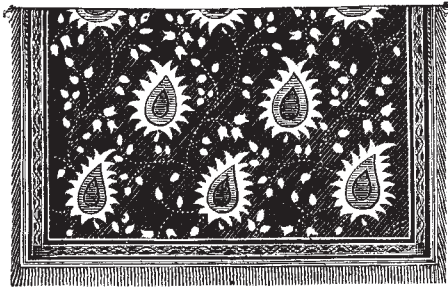


FIG. 2.

ornament in the oldest extant monuments of art in Egypt, side by side with representations of animals; but the previous history of this very developed culture is unknown. In such cases as afford us an opportunity of studying more primitive though not equally ancient stages of culture, as for instance among the Greeks, we find the above dictum confirmed, at any rate in cases where we have to deal with the representation of the indigenous flora as contradistinguished from such representations of plants as were imported from foreign civilisations. In the case that is now to occupy us we have not to go back so very far in the history of the world.

The ornamental representations of plants are of two



FIG. 3.

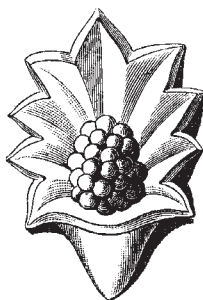


FIG. 4.

kinds. Where we have to deal with a simple pictorial reproduction of plants as symbols (laurel branches, boughs of olive and fir, and branches of ivy), *i.e.* with a mere characteristic decoration of a technical structure, stress is laid upon the most faithful reproduction of the object possible,—the artist is again and again referred to the study of Nature in order to imitate her. Hence, as a general rule, there is less difficulty in the explanation of these forms, because even the minute details of the natural object now and then offer points that one can fasten upon. It is quite another thing when we have to deal with actual decoration which does not aim at anything further than at employing the structural laws of organisms in order to organise the unwieldy substance, to endow the stone with

a higher vitality. These latter forms depart, even at the time when they originate, very considerably from the natural objects. The successors of the originators soon still further modify them by adapting them to particular purposes, combining and fusing them with other forms so as to produce particular individual forms which have each their own history (*e.g.* the Acanthus ornament, which, in its developed form, differs very greatly from the Acanthus plant itself); and in a wider sense we may here enumerate all such forms as have been raised by art to the dignity of perfectly viable beings, *e.g.* griffins, sphinxes, dragons, and angels.

The deciphering and derivation of such forms as these is naturally enough more difficult; in the case of most of

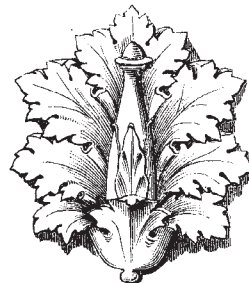


FIG. 5.

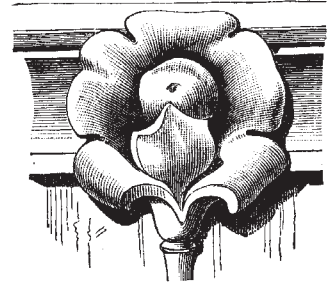


FIG. 6.

them we are not even in possession of the most necessary preliminaries to the investigation, and in the case of others there are very important links missing (*e.g.* for the well-known Greek palmettas). In proportion as the representation of the plant was a secondary object, the travesty has been more and more complete. As in the case of language, where the root is hardly recognisable in the later word, so in decorative art the original form is indistinguishable in the ornament. The migration of races and the early commercial intercourse between distant lands have done much to bring about the fusion of types; but again in contrast to this we find, in the case of extensive tracts of country, notably in the Asiatic continent, a fixity, throughout centuries, of forms that have once been

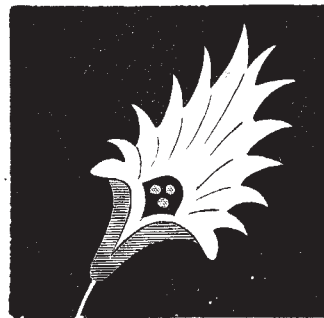


FIG. 7.

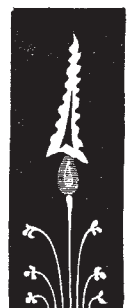


FIG. 8.

introduced, which occasions a confusion between ancient and modern works of art, and renders investigations much more difficult. An old French traveller writes:—“J’ai vu dans le trésor d’Ispahan les vêtements de Tamerlan; ils ne diffèrent en rien de ceux d’aujourd’hui.” Ethnology, the natural sciences, and last, but not least, the history of technical art are here set face to face with great problems.

In the case in point, the study of the first group of artistic forms that have been elaborated by Western art leads to definite results, because the execution of the forms in stone can be followed on monuments that are relatively not very old, that are dated, and of which the remains are still extant. In order to follow the develop-



ment, I ask your permission to go back at once to the very oldest of the known forms. They come down to us from the golden era of Greek decorative art—from the fourth or fifth century B.C.—when the older simple styles of architecture were supplanted by styles characterised by a greater richness of structure and more developed ornament. A number of flowers from capitals in Priene, Miletus, Eleusis, Athens (monument of Lysicrates), and Pergamon; also flowers from the calathos of a Greek caryatid in the Villa Albani near Rome, upon many Greek sepulchral wreaths, upon the magnificent gold helmet of a Grecian warrior (in the Museum of St. Petersburg),—these show us the simplest type of the pattern in question, a folded leaf, that has been bulged out, inclosing a knob or a little blossom (see Figs. 3 and 4). This is an example from the Temple of Apollo at Miletus, one that was constructed about ten years ago, for educational purposes. Here is the specimen of the flower of the monument to Lysicrates at Athens, of which the central part consists of a small flower or fruits (Figs. 5 and 6).

The form passes over into Roman art. The larger scale of the buildings, and the pretensions to a greater richness in details, lead to a further splitting up of the leaf into Acanthus-like forms. Instead of a fruit-form a fir-cone appears, or a pine-apple or other fruit in an almost naturalistic form.

In a still larger scale we have the club-shaped knob developing into a plant-stem branching off something after the fashion of a candelabra, and the lower part of

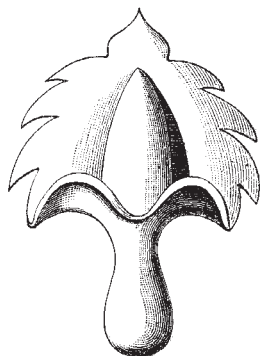


FIG. 9.

the leaf, where it is folded together in a somewhat bell-shaped fashion, becomes in the true sense of the word a campanulum, out of which an absolute vessel-shaped form, as e.g. is to be seen in the frieze of the Basilica Ulpia in Rome, becomes developed.

Such remains of pictorial representation as are still extant present us with an equally perfect series of developments. The splendid Græco-Italian vessels, the richly ornamented Apulian vases, show flowers in the spirals of the ornaments, and even in the foreground of the pictorial representations, which correspond exactly to the above-mentioned Greek relief representations. [The lecturer sent round, among other illustrations, a small photograph of a celebrated vase in Naples (representing the funeral rites of Patroclus), in which the flower in question appears in the foreground, and is perhaps also employed as ornament (Figs. 7 and 8).]

The Pompeian paintings and mosaics, and the Roman paintings, of which unfortunately very few specimens have come down to us, show that the further developments of this form were most manifold, and indeed they form in conjunction with the Roman achievements in plastic art the highest point that this form reached in its development, a point that the Renaissance, which followed hard upon it, did not get beyond.

Thus the work of Raphael from the loggias follows in unbroken succession upon the forms from the Thermæ of

Titus. It is only afterwards that a freer handling of the traditional pattern arose, characterised by the substitution of, for instance, maple, or whitethorn, for the Acanthus-like forms. Often even the central part falls away completely, or is replaced by overlapping leaves. In the forms of this century we have the same process repeated. Schinkel and Bötticher began with the Greek form, and have put it to various uses; Stüler, Strack, Gropius, and others followed in their wake until the more close resemblance to the forms of the period of the Renaissance in regard to Roman art which characterises the present day was attained (Fig. 9).

Now what plant suggested this almost indispensable form of ornament, which ranks along with the Acanthus and Palmetta, and which has also become so important by a certain fusion with the structural laws of both?

We meet with the organism of the form in the family of the Araceæ or Aroid plants. An enveloping leaf (bract), called the spathe, which is often brilliantly coloured, surrounds the florets, or fruits, that are disposed upon a spadix. Even the older writers—Theophrastus, Dioscorides, Galen, and Pliny—devote a considerable amount of attention to several species of this interesting family,



FIG. 10.

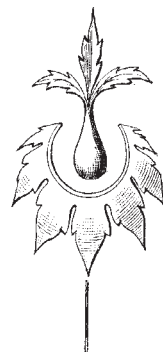


FIG. 11.

especially to the value of their swollen stems as a food-stuff, to their uses in medicine, &c. Some species of Arum were eaten, and even nowadays the value of the swollen stems of some species of the family causes them to be cultivated, as, for instance, in Egypt and India, &c. (the so-called Portland sago, Portland Island arrowroot, is prepared from the swollen stems of *Arum maculatum*). In contrast with the smooth or softly undulating outlines of the spathe of Mediterranean Araceæ, one species stands out in relief, in which the sharply-marked fold of the spathe almost corresponds to the forms of the ornaments which we are discussing. It is *Dracunculus vulgaris*, and derives its name from its stem, which is spotted like a snake. This plant, which is pretty widely distributed in olive-woods and in the river-valleys of the countries bordering on the Mediterranean, was employed to a considerable extent in medicine by the ancients (and is so still nowadays, according to von Heldreich, in Greece). It was, besides, the object of particular regard, because it was said not only to heal snake-bite, but the mere fact of having it about one was supposed to keep away snakes, who were said altogether to avoid the places where it grew. But, apart from this, the striking appear-

ance of this plant, which often grows to an enormous size, would be sufficient to suggest its employment in art. According to measurements of Dr. Julius Schmidt, who is not long since dead, and was the director of the Observatory at Athens, a number of these plants grow in the Valley of Cephissus, and attain a height of as much as two metres, the spathe alone measuring nearly one metre. [The lecturer here exhibited a drawing (natural size) of this species, drawn to the measurements above referred to.]

Dr. Sintenis, the botanist, who last year travelled through Asia Minor and Greece, tells me that he saw beautiful specimens of the plant in many places, *e.g.* in Assos, in the neighbourhood of the Dardanelles, under the cypresses of the Turkish cemeteries.

The inflorescence corresponds almost exactly to the ornament, but the multipartite leaf has also had a particular influence upon its development and upon that of several collateral forms which I cannot now discuss. The shape of the leaf accounts for several as yet unexplained extraordinary forms in the ancient plane-ornament, and in the Renaissance forms that have been thence developed. It first suggested the idea to me of studying the plant attentively after having had the opportunity five years ago of seeing the leaves in the Botanic Gardens at Pisa. It was only afterwards that I succeeded in growing some flowers which fully confirmed the expectations that I had of them (Figs. 10 and 11).

(To be continued.)

#### NOTES

THE International Conference on Education in connection with the International Health Exhibition will be opened on Monday, August 4, at 11 a.m., and will continue throughout the week. The arrangements as yet are not quite complete, but it is announced that the following papers, among others, will be read:—(1) Conditions of Healthy Education:—On the structure, fitting, and equipments of a school, by the Rev. Canon Holland, Canterbury, and Rev. E. F. M. MacCarthy, King Edward's School, Birmingham; on gymnastics and other physical exercises, by Captain Burney, R.N., Royal Hospital School, Greenwich, and H. J. Wilson, J.P., Sheffield; on the right apportionment of time to different subjects of instruction in schools of various classes, by H. W. Eve, University College School, London. (2) Infant Training and Teaching:—What Fröbel did for young children, by Miss Manning; on the relations of the Kindergarten to the various industries of a country, by Fräulein E. Heerwart; on the main work to be accomplished by Kindergartens for the people, and on the methods of training teachers in such institutions, by Madame Schrader, Berlin. (3) Technical Teaching:—(a) Science, (b) Art, (c) Handicrafts, (d) Agriculture, (e) Domestic Economy:—On the methods of teaching the different branches of physical and of natural science, by Henry E. Armstrong, Ph.D., F.R.S.; the teaching of science in public elementary schools, by W. J. Harrison, Birmingham; science teaching in training colleges, by H. A. Reatchlous, Westminster Training College; on the teaching of drawing and colouring as a preparation for designing and decorative work, by John Sparkes, Science and Art Department, A. F. Brophy, Finsbury Technical College, and T. R. Ablett, London School Board; on technical teaching, by Prof. Garnett, University College, Nottingham, and E. M. Dixon, Allen Glen Institute, Glasgow; on technical teaching in Board schools, by J. F. Moss, Sheffield School Board; on manual training schools, by Prof. Woodward, St. Louis, U.S.; (d) the teaching of agricultural science in elementary, in intermediate, and higher schools, in evening science classes, in special colleges, and in the Universities, methods of teaching, &c., by the Rev. J. McClellan, Royal Agricultural College, Cirencester, J. Wrightson, Wiltshire Agri-

cultural College, and others; on school farms and farm schools, by H. M. Jenkins, Royal Agricultural Society; on methods of teaching cookery in schools, by Miss Fanny Calder, Hon. Sec. Northern Union of Schools of Cookery. (4) Teaching of Music in Schools. (5) Museums, Libraries, and other Subsidiary Aids to Instruction in Connection with Schools:—On school museums, by Dr. Jex Blake, Rugby. (6) Training of Teachers:—By G. B. Davis, Birmingham, and C. Mansford, Wesleyan Training College, Westminster; on some of the differences which exist between the training, position, and duties of elementary teachers in Great Britain and on the Continent, by the Rev. Canon Cromwell, St. Mark's College, Chelsea; Universities and their relations to the training of teachers, by the Rev. R. H. Quick, Sedbergh; professorships and lectureships on education, by Prof. S. Laurie, University of Edinburgh, and Prof. J. M. D. Meiklejohn, St. Andrew's University; on diplomas and certificates and the registration of teachers, by F. Storr; on training colleges in Scotland, by the Rev. J. Morrison, D.D., Glasgow. (7) Inspection and Examination of Schools:—(a) By the State, by W. Kennedy, Glasgow; (b) by the Universities—on the University local examinations, by the Rev. G. F. Browne, B.D.; on the University extension movement, by Albert J. Grey, M.P., and E. T. Cook; by other public bodies, by the Rev. H. L. Thompson, Iron Acton. (8) Organisation of Elementary Education:—By Sir U. Kay Shuttleworth, Bart., and T. E. Heller; on the English system of elementary education—its growth and present condition, by the Rev. H. F. Roe, Sherborne. (9) Organisation of Intermediate and Higher Education:—On the requirements of a truly national system of higher education and the proper relation of the old Universities to such a system, by R. D. Roberts, Clare College, Cambridge; on the comparative advantages and disadvantages of arranging the course of study in the various school classes on lines of subjects appointed for local University or other general examinations, by the Rev. R. B. Poole, Bedford Modern School; on the advantages and disadvantages of providing for intermediate and higher education by means of a rate, as is done in the case of elementary education, by the Rev. Canon Daniel, and Hon. E. Lyulph Stanley, M.P.; on the organisation of higher education for girls, by Miss Beale, Cheltenham; on the curriculum of a girls' high school, by Mrs. Bryant, B.Sc. (10) Organisation of University Education:—On the proper relation between the teaching and examining bodies in a University, by Sir George Young, Bart.; on scientific teaching in a University, by Prof. Fleeming Jenkin; on the University education of women, by Mrs. H. Sidgwick; on the relation of a University to the colleges, by G. W. Hemming; on the relation of provincial colleges to a University, by E. Johnson, Nottingham; on the duties of the Universities to our Indian Empire, by Prof. Monier Williams.

HER MAJESTY has been pleased to confer a baronetcy upon Mr. Bernhard Samuelson, M.P., and a knighthood upon Prof. Roscoe, in consideration of the services rendered by them in connection with the Technical Education Commission. Sir Bernhard Samuelson well deserves the honour which has been conferred upon him; the services which he has rendered to science and to scientific education both in and out of Parliament, by his insisting for so many years on the importance of science to our national industries, is well known to all our readers.

"A NATURALIST," in a letter to the *Times* of yesterday, again draws attention to the scheme for a Marine Biological Laboratory, showing the practical utility of such an institution by quoting the report of Prof. Brooks on the researches on oysters carried out in the Marine Biological Laboratory founded by the Johns Hopkins University. In a leading article the *Times* very heartily supports the appeal of "A Naturalist" for subscriptions to the Marine Biological Association, an appeal which we hope will be liberally responded to.